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(71) Applicant: **CLIPER S.R.L.**
Via G. di Vittorio 16
Toscanella di Dozza (Bologna) (IT)

(72) Inventor: **Conti, Umberto**
Viale Rivalta 73
Imola Bologna (IT)

(74) Representative: **Dall'Olio, Giancarlo**
INVENTION s.n.c. Via Arienti 26
I-40124 Bologna (IT)

(54) Method for constructing false ceilings or false walls using slats of metal and/or synthetic resins, and structure that embodies such method.

(57) The method envisages: the construction of pairs of first and second bars 6 and 16 with pairs of hooks 7 and 17 the working surfaces of which 7a and 17a are slanted in relation to axes 8 and 18 respectively by a first angle "β" and a second angle "φ" which is complementary to the first; the positioning of the first and second bars perpendicularly to each other, at the longitudinal sides 2a and the transverse sides 2b, respectively, in such a manner as to make the working surfaces 7a of hook pairs 7 co-planar with working surfaces 17a of hook pairs 17, the said hooks being fixed to the aforementioned bars; the attaching of the slats 1 to bars 6 and 16 by press-fitting the curved edges 1a of each slat on to the working surfaces 7a and 17a of hook pairs 7 and 17.

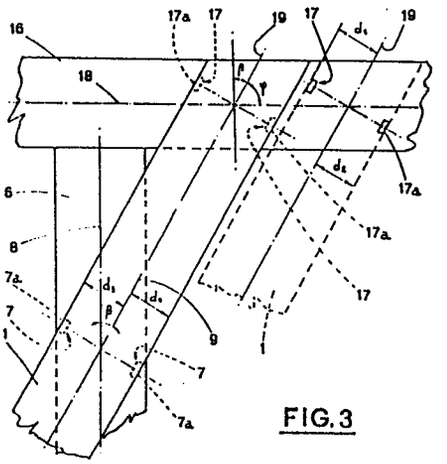

FIG.3

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Description

Method for constructing false ceilings or false walls using slats of metal and/or synthetic resin, and structure that embodies such method

The present invention relates to the technical field concerning the methods to construct false ceilings or false walls by means of slats of metal and/or synthetic resin as well as the structures that are used to implement these methods.

The known method is effective when the slats are required to be parallel to one, predetermined side of a section (wall or ceiling); in such a case a pair of hooks is made in suitable bars (the hooks of each pair being aligned so they are parallel to the axis of the related bar), the said bars are arranged perpendicularly to the predetermined side (locked to a fixed support) and the curved edges of the slats are then press fitted into a series of hook pairs: in this way, the slats are attached perpendicularly to the bars.

When the slats 1 have to be slanted in such a way that the longitudinal axis of each slat makes an angle "α" with a side 2a of the section 3 (see Fig. 1 of the attached drawings), the known method solves the problem by using the bars 5 equipped with the aforementioned hooks slanted by an angle of (90 - α) in relation to the side 2a, using pieces of bar 5a arranged in groups (for example, at equidistant intervals) between two bars 5 and parallel to the latter, the said pieces 5a being positioned with one of their ends touching side 2a,2b of section 3 and, finally, pressing the curved edges of each slat into the hook pairs; in this case, too (Fig. 1), the slats are attached perpendicularly to the bars 5 and to the pieces of bar 5a.

The method just mentioned is complicated and laborious and involves much time-consuming work to orient each bar and piece of bar correctly; the structure that embodies the method is also complicated since it requires bars of varying length and pieces of bar to ensure the right degree of strength; in particular the structure must be adapted to each section 3 and must be wholly modified when the section varies or, if the latter does not vary, when the aforementioned angle "α" differs.

The object of the invention is to propose a method that makes it possible to construct false ceilings or false walls by means of a succession of basic steps requiring little manpower and simple technological operations and using slats made of metal or synthetic resin, arranged in slanted fashion in relation to the sides of the corresponding section.

A further object of the invention is to propose a structure, that implements the aforementioned method, consisting of a limited number of elements which can be positioned in simple fashion in relation to each other and which the slats can be attached to, whatever the size of the section and whatever the angle of the slats in relation to the section.

As regards the method, the object of the invention is achieved by: constructing at least one pair of first bars, each bar having a pair of equidistant hooks on it, the hooks of each pair being attached to an angle in relation to the axis of the related bar with their working surface parallel to a plane that makes a predetermined first angle "β" with the axis of the related bar; constructing at least one pair of second bars, each bar having a pair of equidistant hooks on it, the hooks of each pair being attached at an angle in relation to the axis of the related bar with their working surfaces parallel to a plane that makes a predetermined second angle "φ" that is complementary to the aforementioned first angle "β" and with the distance between the said working surfaces and the said plane being the same as the distances between the working surfaces of the hooks on the first bars and the related plane; locking the aforementioned first and second bars to a fixed supported which is attached to a section related to a ceiling or wall, the first bars being oriented in such a manner that they are parallel to the longitudinal sides of the section and the second bars being arranged perpendicularly to the first bars and oriented so as to be parallel to the transverse sides of the aforementioned section in such a manner that the working surfaces of the hooks of any one pair are co-planar with the working surfaces of the corresponding pair of hooks in one of the aforementioned first bars; removably attaching a plurality of slats to the said bars by press-fitting the curved edges of each slat on to the working surfaces of the hook pairs.

The characteristics and advantages of the invention are highlighted hereinunder with reference to the attached set of drawings, in which:

- Fig.1 shows schematically a plan view of a portion of a false ceiling made with the known method;
- Fig.2 shows schematically a plan view of a false ceiling 30 made with the structure that embodies the method that is the object of the present invention;
- Fig.3 is an enlargement of detail A of Fig.2;
- Fig.4 is an enlargement of detail B of Fig.2 showing an embodiment of the method that is the object of the present invention;
- Fig.4a is a close-up view of detail C of Fig.4;
- Fig.5 is a perspective view of the constructional details of the bar illustrated in Fig.4;
- Fig.6 shows schematically a plan view of one particular "pattern" that can be obtained on a false ceiling or false wall made with the method that is the object of the present invention.

With reference to Figs.2 and 3, a first bar 6 has pairs of hooks 7 made on it by known means, the said hook pairs being placed at equidistant intervals from each other; the hooks of each pair are set at an angle in relation to the axis 8 of the bar and have their working surfaces 7a parallel to a plane 9 which makes a predetermined angle "β" with axis 8: in the example illustrated, the said surfaces are symmetrical about the aforementioned plane 9.

The slats are marked 1 and are of known type, made of metal or synthetic resin, with edges 1a curved as shown in Fig.5; by press-fitting edges 1a on to the working surfaces 7a of a pair of hooks 7,

slat 1 is attached to bar 6; consequently, when the slat has been attached as just described, its axis makes an angle "β" with the axis of the bar, the latter axis being, in the example illustrated, co-planar with plane 9.

Since the pairs of hooks 7 are placed at equidistant intervals from each other, the particular arrangement and mutual orientation of the hooks of each pair make it possible to fit a number of slats 1 to bar 6, in such a way that the said slats are parallel to each other and slanted by the same angle "β" in relation to axis 8 of bar 6 (see Fig.3).

With reference to Fig.3 again, 16 is another bar with pairs of hooks 17 made on it at equidistant intervals from each other; the hooks of each pair are set at an angle in relation to the axis of the bar and have their working surfaces 17a parallel to a plane 19 which makes with axis 18 an angle "φ" that is complementary to the aforementioned angle "β": in the example illustrated, the said surfaces 17a are symmetrical about the aforementioned plane 19.

Slats 1 can be attached to the second bar 16 in the same way as they were to the first bar 6; when they have been fitted in this way, slats 1 are parallel to each other and all slanted by the same angle "φ" in relation to axis 18 of bar 16 (see Fig.3).

It is stressed that distances d1 and d2 between the working surfaces 17a and plane 19 are the same as the corresponding distances d3 and d4 between working surfaces 7a and plane 9.

The method proposed by the present invention envisages the steps listed below.

The construction of a number of first bars 6.

The construction of at least one pair of second bars 16.

The first bars 6 are attached to a fixed support (not illustrated, e.g. the ceiling related to section 3) by known means 11 (Fig.5), the said bars being positioned parallelly to a longitudinal side 2a of section 3 (Fig.2); the aforementioned bars are preferably, but not necessarily, equidistant from each other, especially the end bars positioned at the longitudinal sides 2a of section 3.

The pair of second bars 16 are attached to the aforementioned fixed support perpendicularly to the first bars at the transverse sides 2b of section 3 (Fig.2); the mutual positioning of the second bars 16 in relation to the first bars 6 must be such that the aforementioned planes 9 and 19 are co-planar; consequently, the working surfaces 17a and 7a of hook pairs 17 and 7, respectively will also be co-planar.

A number of slats 1 are removably attached to the aforementioned bars 6 and 16 by press-fitting the curved edges 1a of each slat on to the working surfaces 7a and 17a of the corresponding pairs of hooks 7 and 17 (Fig.2).

In this way, a false ceiling 50 is made wherein the slats make an angle "β" with the longitudinal sides 2a and an angle "$\varphi = 90-\beta$" with the transverse sides 2b.

The proposed method is universal in that by changing angle "β" in the first bars 6 and its complementary angle "β" in the second bars 16, it is possible to make false ceilings with slats slanted to any desired degree in relation to sides 2a and 2b of section 3.

Furthermore, the present method enables one to make false ceilings or false walls with a pattern illustrated schematically in Fig.6.

The structure that embodies the method is constituted by a number of identical first bars 6 and a pair of identical second bars 16.

If "β" = "φ" = 45°, then it is possible to use bars 6 that are identical to bars 16; to accomplish this, each pair of hooks 7 must have a corresponding pair 27 made in the same bar 6, in such a manner that the related working surfaces 27a are parallel to a plane 9a which is perpendicular to plane 9 which is in turn parallel to the working surfaces 7a of hooks 7, with the aforementioned planes intersecting at axis 8 of bar 6 (Fig.4a).

The bars 6 obtained as described above have made in them holes 30 that are equidistant from two consecutive pairs of corresponding hooks 7 and 27 and centered in relation to the axis of the related bar: when the longitudinal or transverse bar is cut in order to define the corners T of the structure, the holes 30 in the two bars that combine to form a corner T are positioned at the vertices of a right angled triangle; if holes are then made in angle pieces 31 (Fig.4a) at the vertices of a right angled triangle that is identical to that just described, then with an appropriate number of angle pieces it is possible, by placing the holes in the angle pieces exactly coaxially over the holes in the bars, to pass fixing means through each pair of holes so as to removably attach the angle pieces to the bars; this ensures the co-planarity between the working surfaces 7a and 17a of the hooks of the corresponding hook pairs 7 and 17.

In short, the only technological operation required by the method is the placing of hooks 7 and 17 in bars 6 and 16; the remaining steps in the method consist in attaching bars 6 and 16 to a fixed support and in mutually positioning the bars in the most appropriate manner.

The structure that embodies the method consists of a first set of identical bars 6 and two identical second bars 16; this means that it has two basic types of elements only, namely the bar of the first type and the bar of the second type, which may be reduced to just one basic element where "β" = "φ" = 45° when the type of mutual arrangement of hooks 7 and 27, illustrated in Fig.4a, is used.

In a borderline case, the structure might even be constructed with just four bars, two longitudinal and two transverse, positioned at sides 2a and 2b of the section.

In the examples illustrated, hooks 7 and 17 have been placed on opposite sides of axes 8 and 18 of the related bars 6 and 16; this should not be construed as a restriction, since both hooks of each pair might equally well be placed on the same side of the related axis.

Furthermore, for each bar, only pairs of hooks operating on the slat have been considered; obviously, instead of two hooks, there might be three or more, or even just one, operating on the slat.

It is understood that the description given herein

is purely an unlimited example and thus that eventual variations in the constructional details that tend to achieve the same results all fall within the framework of protection afforded to the invention as claimed hereinafter.

Claims

1) A method for constructing false ceilings or false walls by means of slats of metal and/or synthetic resin characterized by the stages listed hereinafter: the construction of at least one pair of first bars 6, each bar 6 having a pair of equidistant hooks 7 on it, the hooks of each pair being attached at an angle in relation to the axis 8 of the related bar 6 with their working surfaces 7a parallel to a plane 9 that makes a predetermined first angle "β" with the axis 8 of the related bar 6; the construction of at least one pair of second bars 16, each bar 16 having a pair of equidistant hooks 17 on it, the hooks of each pair being attached at an angle in relation to the axis 18 of the related bar 16 with their working surfaces 17a parallel to a plane 19 that makes a predetermined second angle "φ" that is complementary to the aforementioned first angle "β" and with the distances d1 and d2 between the said working surfaces 17a and the said plane 19 being the same as the distances d3 and d4 between the working surfaces 7a of the hooks 7 on the first bars 6 and the related plane 9; the attaching of the aforementioned first and second bars 6 and 16 to a fixed support which is attached to a section 3 related to a ceiling or wall, the first bars 6 being oriented in such a manner that they are parallel to the longitudinal sides 2a of the section 3 and the second bars 16 being arranged perpendicularly to the first bars 6 and oriented so as to be parallel to the transverse sides 2b of the aforementioned section 3 in such a manner that the working surfaces 17a of the hooks 17 of any one pair are co-planar with the working surfaces 7a of the corresponding pair of hooks 7 in one of the aforementioned first bars 6; the removable attaching of a plurality of slats 1 to the said bars by press-fitting the curved edges 1a of each slat 1 on to the working surfaces 7a and 17a of the hook pairs 7 and 17.

2) A method according to claim 1 characterized by the fact that the working surfaces of hook pairs 7 and 17 on the first and second bars 6 and 16 are symmetrical about the aforementioned corresponding planes 9 and 19.

3) A structure that embodies the method claimed in claim 1 above, characterized in that it includes the items listed hereinafter: at least one pair of first bars 6, each bar 6 having a pair of equidistant hooks 7 on it, the hooks of each pair being attached at an angle in relation to the axis 8 of the related bar 6 with their working surfaces 7a parallel to a plane 9 that makes a predetermined first angle "β" with the axis 8 of the related bar 6; at least one pair of second bars 16, each bar 16 having a pair of equidistant hooks 17 on it, the hooks of each pair being attached at an angle in relation to the axis of the related bar 16 with their working surfaces 17a parallel to a plane 19 that makes a predetermined second angle "φ" that is complementary to the aforementioned first angle "β" and with the distances d1 and d2 between the said working surfaces 17a and the said plane 19 being the same as the distances d3 and d4 between the working surfaces 7a of the hooks 7 on the first bars 6 and the related plane 9; the aforementioned first and second bars 6 and 16 being attached to a fixed support perpendicularly to each other at, respectively, the longitudinal sides 2a and the transverse sides 2b of a section 3; means also being provided to make the working surfaces 17a of the hooks 17 on the second bars 16 co-planar with the working surfaces 7a of the corresponding pair of hooks 7 on one of the aforementioned first bars 6.

4) A structure according to claim 3 characterized by the fact that the working surfaces 7a and 17a of the hooks 7 and 17 of each pair of hooks on the first and second bars 6 and 16 are symmetrical about the aforementioned corresponding planes 9 and 19.

5) A structure according to claims 3 and 4 wherein the aforementioned first angle "β" and the second angle "φ" are the same, and which is characterized by the fact that the aforementioned first and second bars 6 and 16 are bars of identical type where each pair of hooks 7 is associated to a corresponding pair of hooks 27 the working surfaces of which 27a are parallel and symmetrical about a plane 9a that is perpendicular to the plane 9 which is in turn parallel to the working surfaces 7a of the previously mentioned hooks 7, the said planes 9 and 9a intersecting at the axis of the related bar.

6) A structure according to claims 3 and 5 characterized by the fact that the aforementioned means consist of angle pieces 31 each with at least three holes in it, arranged as if at the vertices of a right angled triangle, the said angle pieces being positioned in such a way that the holes are coaxial with the holes 30 made in a first and a second bar which combine to form a corner T of the structure, the said angle pieces being attached to the structure at corners T by appropriate fixing means through the holes, made coaxial, in angle piece 31 and bars 6 and 16.

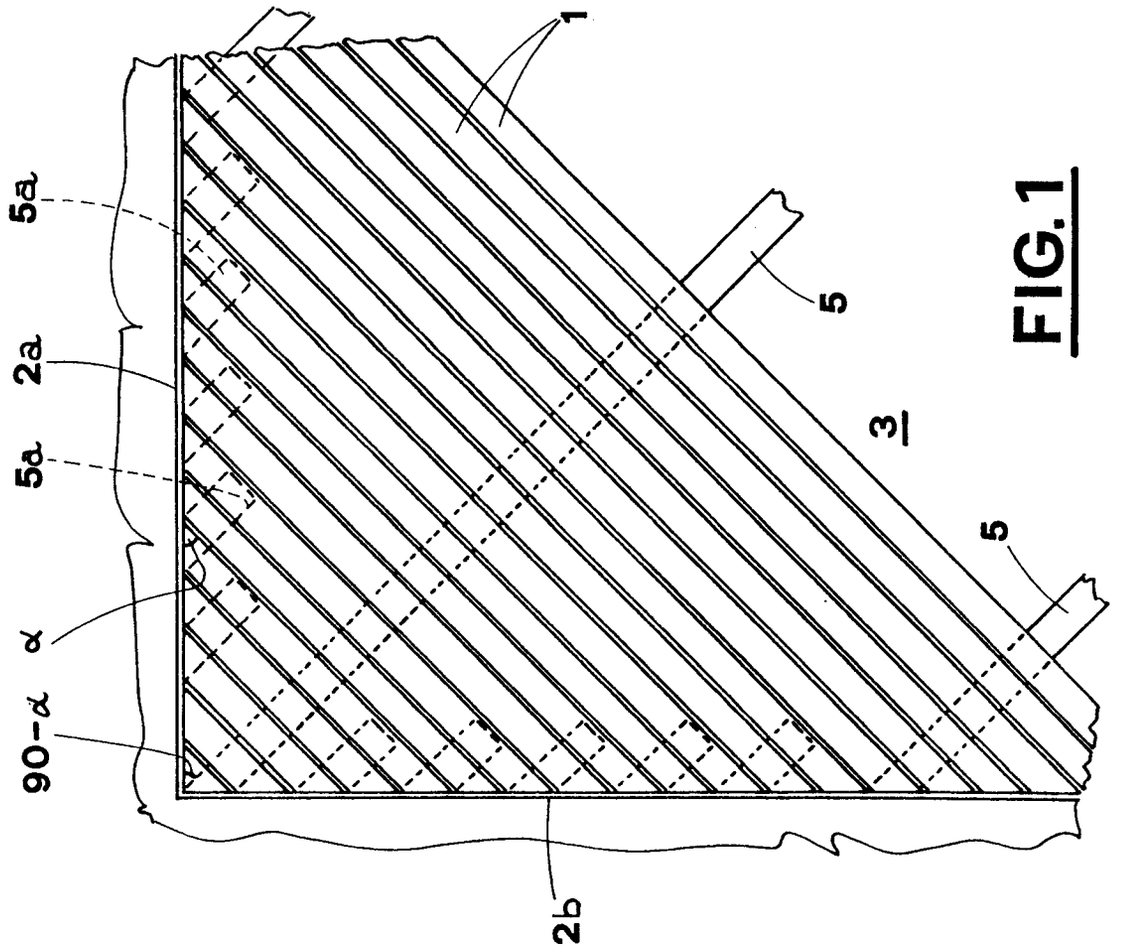


FIG.1

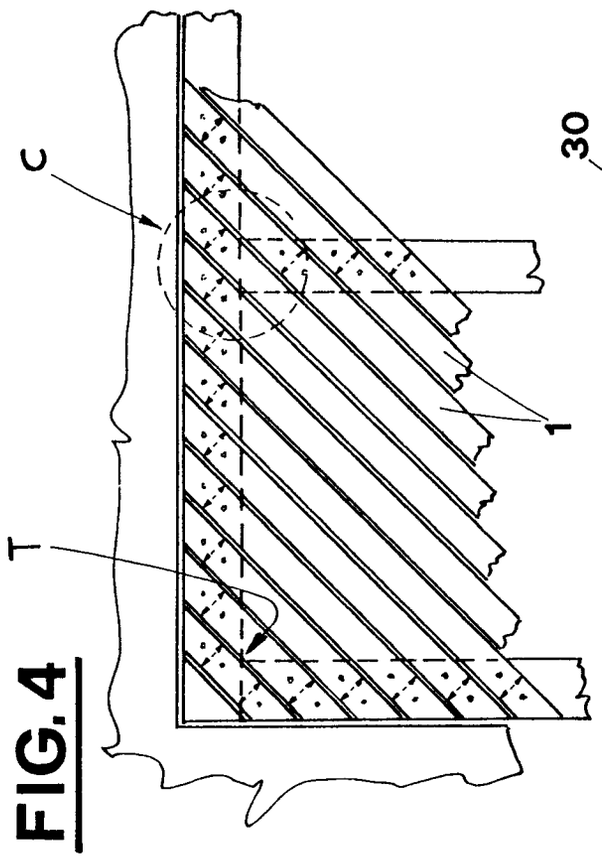


FIG.4

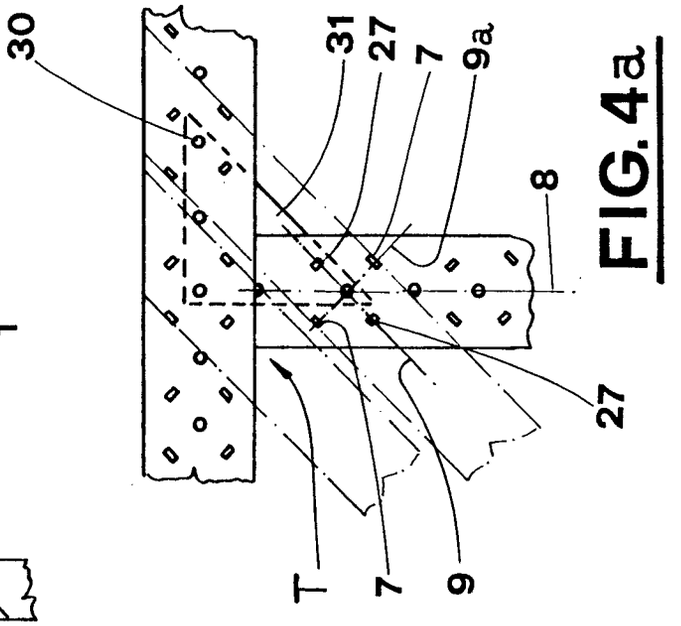


FIG.4a

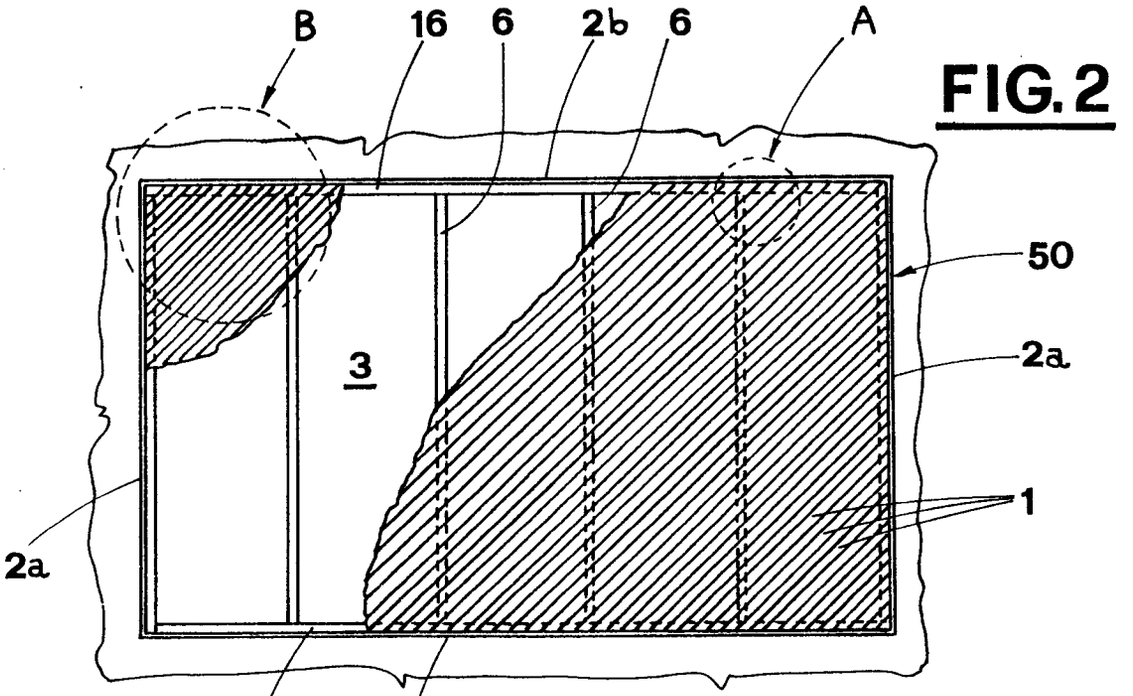
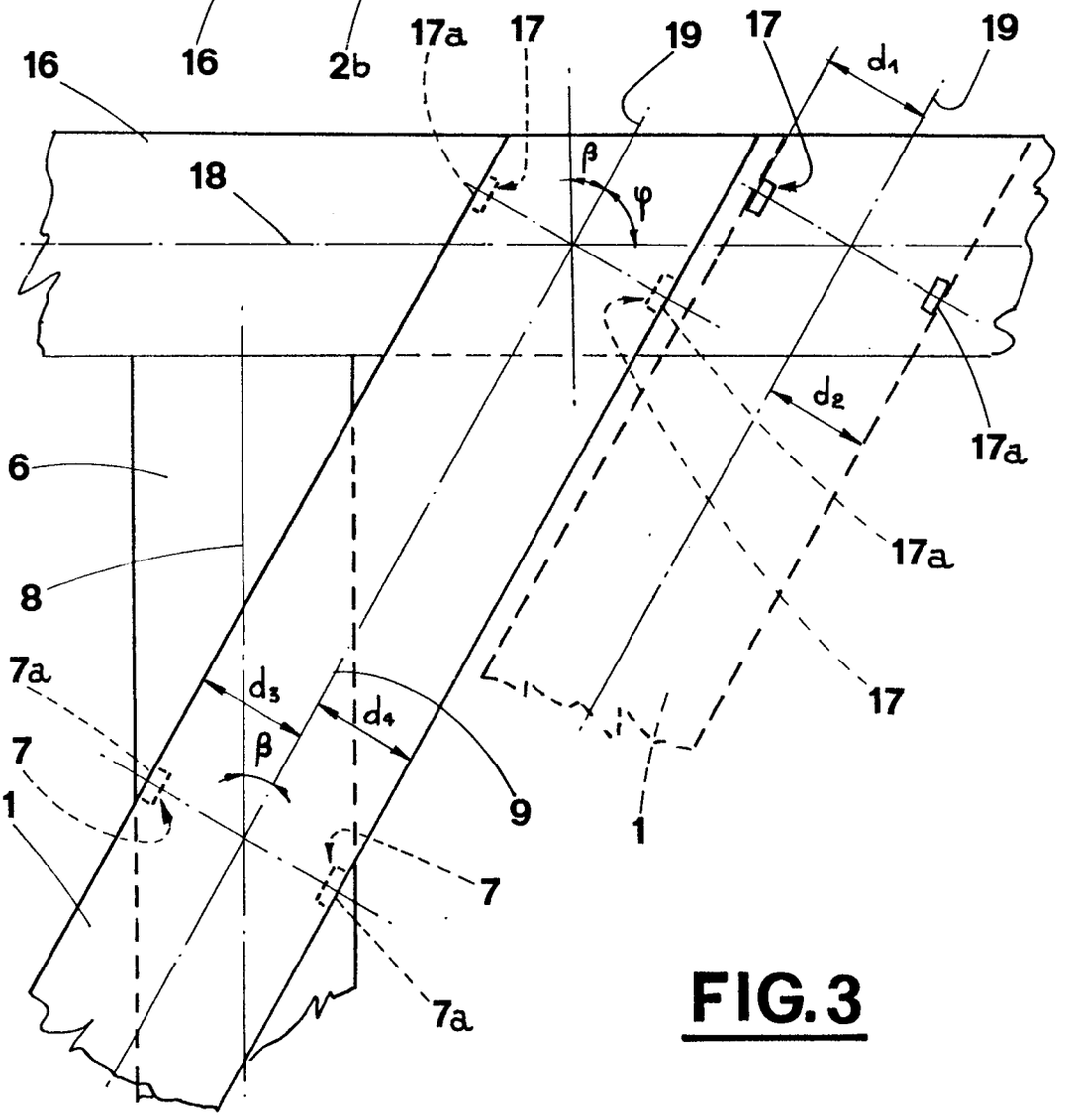

B
16
6
2b
6
A
50
3
2a
1
2a
16
16
2b

FIG. 2


17a
17
19
17
19
d1
16
18
β
φ
d2
17a
6
17a
8
7a
d3
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7
9
1
1
7
7a

FIG. 3

FIG.5

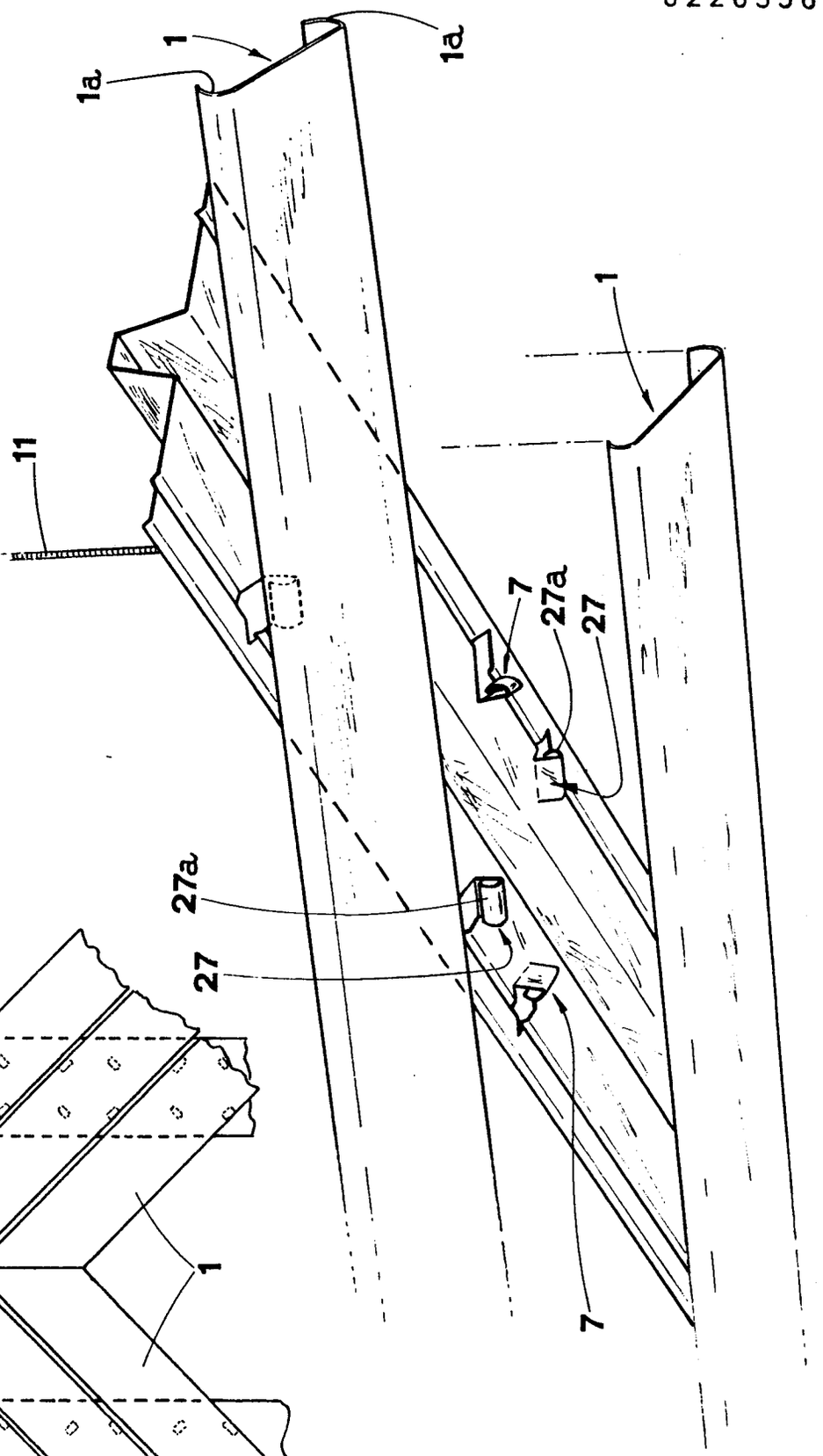

FIG.6